

## CLAIMS

### WHAT IS CLAIMED IS:

- 1           1.     A method of manufacturing an integrated circuit substrate  
2     including a strained layer, the method comprising:  
3                 providing a base layer;  
4                 providing an insulating layer above the base layer;  
5                 providing a semiconductor layer above the insulating layer;  
6     and  
7                 forming a plurality of pillars in the base layer.
- 1           2.     The method of claim 1, further comprising providing a  
2     compressive material in apertures associated with the pillars.
- 1           3.     The method of claim 2, further comprising planarizing the  
2     compressive material until the base layer is reached.
- 1           4.     The method of claim 1, wherein the semiconductor layer  
2     includes silicon.
- 1           5.     The method of claim 1, wherein the insulative layer includes  
2     silicon dioxide.
- 1           6.     The method of claim 1, wherein the base layer includes  
2     silicon.
- 1           7.     The method of claim 1, wherein the pillars have a width of  
2     2000-3000 Å.
- 1           8.     The method of claim 1, wherein the compressive material  
2     includes nitride.

1           9.     A method of forming a strained semiconductor layer above a  
2 base layer, the method comprising:

3                 etching a plurality of trenches in the base layer; and  
4                 providing a compressive material in the trenches.

1           10.    The method of claim 9, further comprising providing a liner in  
2 the trenches.

1           11.    The method of claim 10 further comprising providing a  
2 mechanical compressive force on the base layer.

1           12.    The method of claim 9, where the trenches are in a waffle  
2 pattern.

1           13.    The method of claim 9, wherein the compressive material is  
2 a low thermal resistance material.

1           14.    The method of claim 9, wherein the compressive material  
2 includes nitride.

1           15.    The method of claim 9, wherein a buried oxide layer is  
2 between the base layer and the strained semiconductor layer.

1           16.    The method of claim 9, wherein the semiconductor layer is  
2 silicon.

1           17.    A substrate comprising:  
2                 a strained layer; and  
3                 a base layer below the strained layer having trenches on a  
4 side opposite the strained layer, the trenches inducing stress in the  
5 strained layer.

1           18.    The substrate of claim 17, wherein the strained layer is a  
2   strained silicon.

1           19.    The method of claim 17, further comprising a compressive  
2   material in the trenches.

1           20.    The substrate of claim 17, further comprising a buried oxide  
2   layer between the base layer and the strained layer.